

**UNITED STATES PATENT AND TRADEMARK OFFICE**In re the Application of: **Mitsushi FUJIKI**Group Art Unit: **2823**Application Number: **10/772,253**Examiner: **Thanh V. Pham**Filed: **February 6, 2004**Confirmation Number: **6491****For: METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE
INCLUDING A LOW-TEMPERATURE LOWER
ELECTRODE-FORMING STEP**Attorney docket Number: **042068**Customer Number: **38834****DECLARATION UNDER 37 C.F.R. § 1.132****Commissioner for Patents
P.O.Box 1450
Alexandria, VA 22313-1450**

Date Filed

Sir:

I, Mitsushi Fujiki, a citizen of Japan, hereby declare and state the following:

1. I graduated from Osaka University of Osaka, Japan in 1996 with a Ph.D. degree in Science.
2. Since 1997, I have been employed by Fujitsu Limited of Kanagawa, Japan where my present title is engineer of FeRAM development. During my employment therein, I have conducted research and development of processing for FeRAM.
3. I am the author of the following publications:
M.Fujiki et al., Integrated Ferroelectrics, 26, [1 - 4] 269-275 (1999).
J.S.Cross et al., Jpn. J. Appl. Phys., 38, L448-450 (1999).
4. I have read and am familiar with the above-identified patent application as well as the Official Action dated Aug. 28, 2007, in the application.
5. I have read and am familiar with the contents of cited references, U.S. Patent Nos. 6,300,654 to Convasce et al.; 6,444,099 to Sasaki et al.; and 6,964,873 to Matsuura et al. cited in the Official Actions in the above-identified application.

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6. Under my supervision and control, I conducted experiments to obtain data for data retention characteristics when Ti deposition was carried out at a temperature higher than room temperature and lower than 200°C. Because the Ti films deposited at the condition would make crystallinity of PZT films higher and data retention characteristics of FeRAM better.

7. Data retention characteristics in the FeRAMs exhibit a tendency similar to the characteristics (Ti(002) and PZT(111) intensity relative to the substrate temperature), and shows that the data retention characteristics can be improved by keeping the substrate temperature at a temperature higher than room temperature and lower than 200°C.

Data retention characteristics in the FeRAMs are not referred to, suggested or expected in any of the cited references, and accordingly, even if the teachings of respective references are combined, it would be not have been obvious to one of ordinary skill in the art to easily from a high reliability ferroelectric capacitor as in the claimed invention.

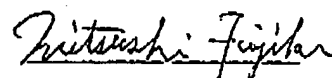
8. From the attached experimental results, I have concluded, among other things, Ti deposition at a temperature higher than room temperature and lower than 200°C have improved data retention characteristics for FeRAM.

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The undersigned declares that all statements made herein of his own knowledge are true, and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under § 1001 of Title 18 of the United States Code and that willful false statements may jeopardize the validity of the application or any patent issued thereon.



Mitsushi Fujiki

Signed this 14 day of Nov., 2007.